

# Municipal energy planning

# Apeldoorn (NL)

## GENERAL ASPECTS

The city of Apeldoorn (pop. 153 000) is the 10th city of the Netherlands and lies in the sandy area of Veluwe in the centre of the country. The city's 61,750 dwellings will increase by 10% under current development proposals



## BACKGROUND

In 1997 the city of Apeldoorn agreed on a memorandum "Apeldoorn Develops Sustainable, Adaptable and Flexible (DAF)". The DAF-memorandum uses the Ecopolis strategy as a framework: the principle of the sustainable city. The end goal is highly ambitious: a CO<sub>2</sub> neutral city, and it is hoping to fund this from the Gelderland Municipal Development Policy Fund. Sustainability has to be achieved in an integral and interdisciplinary manner both in the existing city and in three new development areas to the east of Apeldoorn whose development started in 2000-1.

An essential element in the action in Apeldoorn has been cooperation with the energy company, NUON. This was created as a result of a merger between four regional energy companies and a number of acquisitions. NUON, as a multinational, is well positioned in the market for the distribution of energy and water and related products and services. In Apeldoorn NUON is responsible for distribution, purchase and supply while the local electricity grid is managed by a separate subsidiary: CONTINUON.

## ACTION UNDERTAKEN

The first development area is Groot Zonnehoeve, a semi-rural area in which 1200 dwellings will be built between 2000 and 2003. In the master plan profitable sustainable energy sources, especially biogas, are given much attention. The Energy Performance Ratio to be used will be 0.8. That is a 20% improvement compared to the national standard. The second area is Zuidbroek, a typical urban extension on which 5000 dwellings will be built between 2001 and 2010. Again, utilisation of RES is a major consideration.

These areas are being developed on sustainable lines and their locations have been identified using the Dutch Government's Energy Performance on Location (EPL) tool, designed to minimise the use of fossil energy. Energy infrastructure has been optimised through a NOVEM funded study.

The third area is a commercial and industrial estate of 97 ha called the Ecofactorij which is being developed on ecological and sustainable lines. The objective is to use no fossil fuels at all. The municipality has drafted a quality plan and a estate management model in order to achieve this. The quality plan consists of three elements and covers nine themes including energy.

The three elements are:

- The **Basic Plan** including those measures for which the community takes responsibility, like energy infrastructure and traffic management,
- The **Location Conditions** element indicates what prerequisites must be met by businesses to be allowed to locate in the Ecofactorij, including the obligation to use sustainable energy,
- The **Additional Considerations** element includes sustainable measures relating to products and process innovation that are not compulsory, but which will yield 'eco-points' to the companies, entitling them to discounts on the price of the land.

Plans designed to create an autonomous energy supply include wind energy from wind turbines, biogas from gasification (and possibly methanisation) of biomass, incineration of poultry litter, and Winnerway. Winnerway is technique by which heat is recovered from asphalt; the road surface functioning as a solar collector<sup>1</sup>. At the moment the city is analysing the demand side - the energy produced should be used to supply part of the (new) residential areas as well - the feasibility of the supply side and the realisation of a hybrid energy system.

An agreement known as a "covenant" has been signed by the city, the energy company NUON, the waste recycling company VAR, the TNO research centre and the centre for gas technology GASTEC in order to implement the targets concerning renewable energy. However liberalisation has limited the direct interest of the energy company in this covenant and it is now taking a less active role. For instance it is not possible to obtain an estimate of the energy use in the city since the Energy Company (NUON) is not willing to provide this information. Unlike cities such as Rotterdam, Apeldoorn does not have shares in the Energy Company serving its area and so is not able to force the issue.

## Energy Purchase

The objective is to purchase 100% renewable electricity within the boundaries of Apeldoorn by 2020, and as a start the City itself has entered into a combined tendering system with neighbouring Arnhem, and obtained a very competitive supply from NUON, part of which is from green sources. Nevertheless this has not been without its problems. There have been disputes with the distributor about the unit to be used for tendering – NUON considering the public lighting, traffic signals and water pumping stations to be small contracts below the limit and therefore captive, and the municipality argued that they were large enough as a single unit to exceed the 2MW limit. In the end it was agreed by the regulator, the Department of Execution and Supervision, that the use of energy in the building overseeing the management of these services could be considered together, so putting them all over the 2MW limit.

## Energy Services and Awareness Raising

The municipality and NUON both participated in the Apeldoorn Energy Agency (EAA). EAA was founded in 1997 with help of the European SAVE programme in order to carry out part of the energy policy plan of the city. This energy policy was developed in the years 1992-1997 in the framework of the GEA.

Two important starting points were defined:

- Internal consistency - meaning that all policy decisions should be checked for their effects on environmental issues, of which energy is one,
- Harmonizing the activities with the activities of the utility companies. The energy saving objectives were calculated as 23 % of the energy consumption of the year 1990, or 92.5 million m<sup>3</sup> natural gas equivalents<sup>2</sup>, to be reached by the year 2000. If the municipality succeeded is unknown, since no monitoring of the energy plan or energy use took place.

The energy agency carried out a programme of awareness raising including a special programme in schools copied from their partner agency, Heidelberg. The Agency, however, was abandoned in 2001 and replaced by KID, the knowledge and information centre on sustainability based on the ashes of the former agency.

<sup>1</sup> The piping system underneath the asphalt abstracts heat from the road. That cools the surface and prevents rutting. In the winter, the road surface is warmed up with help of the same piping system and the heat that was stored in an aquifer. This makes it unnecessary to spread salt when it is snowing or freezing.

<sup>2</sup> This is the total amount of savings on natural gas and electricity expressed in their energetic equivalents of natural gas.

A sophisticated building management system was already in existence covering public schools and sports accommodation. It was planned to extend this as part of the nationally agreed sustainable development plan (former GEA) but it was then decided that the existing system was not working and the whole procedure was outsourced.

The municipal energy plan identifies four targets: the existing housing stock, new housing, new living and working areas and public lighting. Work has already been completed to promote energy saving among owner occupiers and to renovate the public lighting stock. Work is currently under way to promote higher energy efficiency standards of 0.8 EPS in new build housing and to optimise the energy supply infrastructure in these areas. The main problem with this is that the municipality has no real power to impose these higher standards. Other proposals to work with private housing organisations and institutional housing have not yet been able to proceed due to a lack of interest among the housing corporations and institutional investors. This is because this represents a major outlay for them to save money which they do not recoup themselves in lower expenditure. Another interesting regulation will require 70-80% of new housing to be oriented to obtain the maximum natural solar gain.

NUON has contributed to energy saving itself in the past. It financed energy efficiency and awareness raising under the MAP programme until recently, including support for insulation measures, solar thermal panels, heat pumps, heat recovery, efficient lighting and other projects. At present NUON has developed a new approach for businesses: Efficient Energy management (E2) which provides companies with frequent information concerning their energy use and possible avenues for reducing it.

NUON has renewable energy high on the agenda. The company aims to achieve 10% renewable energy in its supply by 2010, ten years ahead of the government target of 2020. NUON is involved in wind power, solar thermal energy, photovoltaic solar energy, bio-energy and hydropower projects. A proportion of 5 % of all energy sold by NUON originated from RES in 2000.

### **District Heating**

In the past, various proposals to develop a district heating system had come to naught since the experience of central heat distribution systems in single building complexes had not been good. However the city would now like to establish a District heating system in the Ecofactorij development using a closed concession for an energy production and supply system within the area. In addition there would be a biogas supply system to replace natural gas within this area. This is currently under discussion – a CHP unit based on poultry manure is planned with biogas produced from organic waste. However the fiscal system in Germany is much more favourable and it is possible that the system will not be set up in the Netherlands at all.

## **LESSONS LEARNED**

Apeldoorn's initial plan was admirable with a magnificent objective of a complete adaptation of their energy economy. However Apeldoorn's relationships with its energy distributor have proved difficult to maintain over the transition from monopoly service provider to energy trader and this has clearly had an effect. Cooperative working has become more difficult and it has become more difficult to rely on investment from the company. The buck has passed to the local authority, but it is difficult to work without the support of the utility. In effect the local authority have moved from being partners to being adversaries – while the local authority now has to try to get the best deal possible and may go to other suppliers. The utility has tried unsuccessfully to maintain the municipality's dependent role as long as possible but has not succeeded – not the best context for cooperation. Nevertheless cooperation is taking place and is continuing – but clearly not at the same intensity as beforehand.

Apeldoorn had put fine policies in place to promote sustainable development in the new urban extensions planned under the Vinex programme. However as these start, the rigidity of VINEX is being softened by a new government of a different complexion, with talk of more lower density individual plots and greater freedom of choice. It remains to be seen how many of the other policies – light rail, sustainable local concessions, etc. will be maintained.

The loss of the energy agency is particularly worrying since it is clear that the local authority itself is not sure that it can maintain the commitment to sustainable policy over a continued period of time. The policy towards energy companies in the Netherlands has been one of building a national champion that will succeed in a global marketplace. Such organisations do not have local considerations to the fore and succeed on a

contractual and sales mentality rather than a service mentality. Therefore public service in energy efficiency will fall to the local authority or other levels of government, and if these cannot maintain commitment, the situation will gradually get worse.

## IMPLICATIONS FOR PUBLIC POLICY MAKERS

Government must not fall into the trap to think of liberalisation as a free for all. In a liberalised market one needs more support for policies which regulate the free market, not less. A number of financial supports for sustainable local policies have been lifted (e.g. the MAP programme) and have been replaced by the Climate Covenant system. This is based on voluntary cooperation between the local authority and the government. There is need to provide sufficient funding under the Climate Covenant Programme for an active programme of promotion of renewables and energy efficiency if the Government is to hope for any long term improvement in their emissions performance.

### FURTHER INFORMATION

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